

WHAT IS CLAIMED:

1. An image forming apparatus supervisory system configured to supervise a plurality of image forming apparatuses disposed at a plurality of user sides, said image forming apparatus supervisory system comprising:

- a central supervisory apparatus configured to include a processor;
- a plurality of communications adapters configured to connect to the central supervisory apparatus by a communication line;
- a plurality of interfaces configured to connect each of the plurality of image forming apparatuses with each of the plurality of communications adapters;
- a firmware download device provided in the central supervisory apparatus and configured to download prescribed updated firmware to an applicable one or more image forming apparatuses in accordance with updated hardware of the one or more image forming apparatuses; and
- a firmware update device provided in each of the image forming apparatuses and configured to update firmware of the one or more image forming apparatuses with the updated firmware when the updated firmware is downloaded.

2. The image forming apparatus supervisory system according to claim 1, wherein the updated hardware includes a control baseboard or a unit.

3. The image forming apparatus supervisory system according to claim 1, wherein the updated hardware includes one or more non-volatile memories configured to store prescribed firmware.

4. The image forming apparatus supervisory system according to claim 1, further comprising:

- a hardware read device configured to read hardware information of each of the plurality of image forming apparatuses;
- a hardware information transmission device configured to transmit the hardware information from the each of the plurality of image forming apparatuses to the central supervisory apparatus;

a database provided in the central supervisory apparatus and configured to store hardware information of the plurality of image forming apparatuses; and

a database update device configured to update the database based upon the hardware information when receiving the hardware information from the one or more image forming apparatuses.

5. The image forming apparatus supervisory system according to claim 4, wherein said hardware information is transmitted when power is supplied to the image forming apparatus.

6. The image forming apparatus supervisory system according to claim 4, wherein said hardware information is periodically transmitted at a prescribed interval.

7. The image forming apparatus supervisory system according to claim 4, wherein said hardware information is transmitted when prescribed communications are performed between the one or more applicable image forming apparatuses and the central supervisory apparatus.

8. The image forming apparatus supervisory system according to claim 4, further comprising:

a hardware read instruction transmission device provided in the central supervisory system and configured to transmit a hardware read instruction to the applicable one or more image forming apparatuses, wherein said hardware information is transmitted when the applicable one or more image forming apparatuses receives the hardware read instruction.

9. The image forming apparatus supervisory system according to claim 4, further comprising:

a hardware information storage device provided in the each of the plurality of image forming apparatuses and configured to store its own hardware information; and

a hardware information update device configured to update its own hardware information.

10. The image forming apparatus supervisory system according to claim 9, further comprising:

a hardware read device provided in the hardware information update device and configured to read at least a version number of the hardware;

an information comparison device configured to compare the at least a version number with the hardware information stored in the hardware information storage device; and

a determination device configured to determine if the at least a version number conforms to the hardware information, wherein said hardware information update device updates its own hardware information with the at least a version number only when the at least a version number does conform to the hardware information.

11. The image forming apparatus supervisory system according to claim 9, wherein said hardware information is updated when power is supplied to the image forming apparatus.

12. The image forming apparatus supervisory system according to claim 9, wherein said hardware information is periodically updated at a prescribed interval.

13. The image forming apparatus supervisory system according to claim 9, wherein said hardware information is updated when prescribed communications are performed between the one or more applicable image forming apparatuses and the central supervisory apparatus.

14. The image forming apparatus supervisory system according to claim 11, further comprising:

a hardware read instruction transmission device provided in the central supervisory system and configured to transmit a hardware read instruction to the applicable one or more image forming apparatuses, wherein said hardware information is read and transmitted to the central supervisory system when the hardware information transmission device of the applicable one or more image forming apparatuses receives the hardware read instruction.

15. The image forming apparatus supervisory system according to claim 9, further comprising:

a hardware read instruction transmission device provided in the central supervisory system and configured to transmit a hardware read instruction to the applicable one or more image forming apparatuses, wherein said hardware information is updated when the hardware information update device receives the hardware read instruction from the central supervisory apparatus, and is then read and transmitted to the central supervisory apparatus by the hardware information transmission device.

16. The image forming apparatus supervisory system according to claim 14, further comprising:

a conformity check device provided in the firmware download device configured to check conformity of supervisory information including at least the hardware information with the updated firmware, wherein said updated firmware is downloaded if the supervisory information conforms to the updated firmware.

17. The image forming apparatus supervisory system according to claim 16, wherein said updated firmware is regenerated so as to conform to the supervisory information, if the supervisory information does not conform to the updated firmware.

18. A method for remotely supervising a plurality of image forming apparatuses disposed at a plurality of user sides, said method comprising the steps of:

providing a central supervisory apparatus configured to include a processor;

providing a communication line configured to connect to the central supervisory apparatus;

providing a plurality of communications adapters configured to connect to the communication line;

providing a plurality of interfaces configured to connect each of the plurality of image forming apparatuses with each of the plurality of communications adapters;

providing a database configured to store and supervise hardware information of the plurality of image forming apparatuses;

transmitting a hardware read instruction from the central supervisory apparatus to an applicable one or more image forming apparatuses;

reading hardware information from hardware of the applicable one or more image forming apparatuses when power is supplied thereto;  
comparing the read hardware information with previously stored hardware information stored in a memory;  
determining if both of the read and previously stored hardware information conforms with each other;  
updating the previously stored hardware information with the read hardware information when both of the read and previously stored hardware information do not conform with each other;  
reading the updated hardware information;  
transmitting the updated hardware information to central supervisory apparatus when receiving the hardware read instruction;  
updating the database when the transmitted hardware information is received;  
determining if supervisory information stored in the database conforms to prescribed updated firmware; and  
downloading the updated firmware to the applicable one or more image forming apparatuses when the supervisory information conforms to the updated firmware.

19. A method for remotely supervising a plurality of image forming apparatuses disposed at a plurality of user sides, said method comprising the steps of:  
providing a central supervisory apparatus configured to include a processor;  
providing a communication line configured to connect to the central supervisory apparatus;  
providing a plurality of communications adapters configured to connect to the communication line;  
providing a plurality of interfaces configured to connect each of the plurality of image forming apparatuses with each of the plurality of communications adapters;  
providing a database configured to store and supervise hardware information of the plurality of image forming apparatuses;  
transmitting a hardware read instruction from the central supervisory apparatus to an applicable one or more image forming apparatuses;

periodically reading hardware information from hardware of the applicable one or more image forming apparatuses;

comparing the read hardware information with previously stored hardware information stored in a memory;

determining if both of the read and previously stored hardware information conforms with each other;

updating the previously stored hardware information with the read hardware information when both of the read and previously stored hardware information do not conform with each other;

reading the updated hardware information;

transmitting the updated hardware information to central supervisory apparatus when receiving the hardware read instruction;

updating the database when the transmitted hardware information is received;

determining if supervisory information stored in the database conforms to prescribed updated firmware; and

downloading the updated firmware to the applicable one or more image forming apparatuses when the supervisory information conforms to the updated firmware.

20. A method for remotely supervising a plurality of image forming apparatuses disposed at a plurality of user sides, said method comprising the steps of:

providing a central supervisory apparatus configured to include a processor;

providing a communication line configured to connect to the central supervisory apparatus;

providing a plurality of communications adapters configured to connect to the communication line;

providing a plurality of interfaces configured to connect each of the plurality of image forming apparatuses with each of the plurality of communications adapters;

providing a database configured to store and supervise hardware information of the plurality of image forming apparatuses;

transmitting a hardware read instruction from the central supervisory apparatus to an applicable one or more image forming apparatuses;

reading hardware information from hardware of the applicable one or more image forming apparatuses when prescribed communications are performed between the applicable one or more image forming apparatuses and the central supervisory apparatus;

comparing the read hardware information with previously stored hardware information stored in a memory;

determining if both of the read and previously stored hardware information conform with each other;

updating the previously stored hardware information with the read hardware information when both of the read and previously stored hardware information do not conform with each other;

reading the updated hardware information;

transmitting the updated hardware information to central supervisory apparatus when receiving the hardware read instruction;

updating the database when the transmitted hardware information is received;

determining if supervisory information stored in the database conforms to prescribed updated firmware;

downloading the updated firmware to the applicable one or more image forming apparatuses when the supervisory information stored in the database conforms to the updated firmware.

21. A central supervisory apparatus configured to include a processor and to remotely supervise a plurality of image forming apparatuses, a plurality of communications adapters configured to connect to the central supervisory apparatus by a communication line, and a plurality of interfaces configured to connect each of the plurality of image forming apparatuses with each of the plurality of communications adapters, said central supervisory apparatus comprising:

a firmware download device configured to download prescribed updated firmware to an applicable one or more image forming apparatuses in accordance with updated hardware of the one or more image forming apparatuses.

22. The central supervisory apparatus according to claim 21, wherein the updated hardware includes a control baseboard unit.

23. The central supervisory apparatus according to claim 21, wherein the updated hardware includes one or more non-volatile memories configured to store prescribed firmware.

24. The central supervisory apparatuses according to claim 21, further comprising a firmware update device configured to update firmware of the image forming apparatuses with the updated firmware when the updated firmware is downloaded.

25. The central supervisory apparatus according to claim 24, further comprising:  
a hardware read device configured to read hardware information thereof; and  
a hardware information transmission device configured to transmit the hardware information to the central supervisory apparatus.

26. The central supervisory apparatus according to claim 25, wherein said hardware information is transmitted therefrom to the central supervisory apparatus when power is supplied thereto.

27. The central supervisory apparatus according to claim 25, wherein said hardware information is periodically transmitted therefrom at a prescribed interval.

28. The central supervisory apparatus according to claim 25, wherein said hardware information is transmitted therefrom when prescribed communications are performed with the center system.

29. The central supervisory apparatus according to claim 21, further comprising:  
a database configured to store hardware information of the plurality of image forming apparatuses; and



a database update device configured to update the database based upon the hardware information when receiving the hardware information from the one or more image forming apparatuses.

30. The central supervisory apparatus according to claim 21, further comprising a hardware read instruction transmission device configured to transmit a hardware read instruction to the applicable one or more image forming apparatuses.

31. The central supervisory apparatuses according of to claims 30, wherein said hardware information is transmitted therefrom when receiving the hardware read instruction.

32. The central supervisory apparatus according to claims 30, further comprising:  
a hardware information storage device configured to store hardware information related to the plurality of image forming apparatuses; and  
a hardware information update device configured to update the hardware information.

33. The central supervisory apparatus according to claim 25, further comprising:  
a hardware information storage device configured to store hardware information thereof; and  
a hardware information update device configured to update the hardware information.

34. The central supervisory apparatus according to claim 33, further comprising:  
a hardware read device provided in the hardware information update device and configured to read at least a version number of the hardware;  
an information comparison device configured to compare the at least a version number with the hardware information stored in the hardware information storage device;  
and

a determination device configured to determine if the at least a version number conforms to the hardware information, wherein said hardware information update device updates its own hardware information with the at least a version number only when the at least a version number does conform to the hardware information.

35. The central supervisory apparatus according to claim 33, wherein said hardware information is updated when power is supplied to the image forming apparatus.

36. The central supervisory apparatus according to claim 33, wherein said hardware information is periodically updated at a prescribed interval.

37. The central supervisory apparatus according to claim 33, wherein said hardware information is updated when prescribed communications are performed between the one or more applicable image forming apparatuses and the central supervisory apparatus.

38. The central supervisory apparatus according to claim 33, wherein said hardware information is read and transmitted to the central supervisory system when the hardware information transmission device of the image forming apparatuses receives the hardware read instruction.

39. The central supervisory apparatus according to claim 33, wherein the hardware information is updated by the hardware read instruction transmission device when the hardware read instruction is received from the central supervisory apparatus.

40. The central supervisory apparatus according to claim 39, wherein the updated hardware information is transmitted to the central supervisory apparatus by the hardware information transmission device.

41. The central supervisory apparatus according to claim 29, further comprising:  
a conformity check device provided in the firmware download device configured to check conformity of supervisory information including at least the hardware information with the updated firmware, wherein said updated firmware is downloaded if the supervisory information conforms to the updated firmware.

42. The central supervisory apparatus according to claim 41, wherein said updated firmware is regenerated so as to conform to the supervisory information, if the supervisory information does not conform to the updated firmware.

43. An image forming apparatus supervisory system configured to supervise image forming means disposed at a plurality of user sides for forming an image, said image forming apparatus supervisory system comprising:

central supervisory means for remotely supervising image forming means;

communications means for connecting the image forming means with the central supervisory means by a communication line;

interface means for connecting each of the image forming means with each of the communications means;

firmware download means for downloading prescribed updated firmware to an applicable one or more image forming means in accordance with updated hardware of the applicable one or more image forming means, said firmware download means provided in the central supervisory means; and

firmware update means for updating firmware of the one or more image forming means with the updated use firmware when the updated firmware is downloaded, said firmware update means being provided in each of the image forming means.